

10/088539

JC05 Rec'd PCT/PTO 19 MAR 2002

Practitioner's Docket No. 540-016.2

CHAPTER II

Preliminary Classification:

Proposed Class:

Subclass:

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example "Proposed Class 2, subclass 129." M.P.E.P., § 601, 7th ed

TRANSMITTAL LETTER
TO THE UNITED STATES ELECTED OFFICE (EO/US)

(ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)

PCT/FI00/00804

21 September 2000

21 September 1999

INTERNATIONAL APPLICATION NO

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

Method and Device for Processing Pulp

TITLE OF INVENTION

Veikko Kankaanpää

APPLICANT(S)

BOX PCT
U.S. PATENT AND TRADEMARK OFFICE
P.O. BOX 2327
ARLINGTON, VA 22202
ATTN: EO/US

CERTIFICATION UNDER 37 C.F.R. § 1.10*

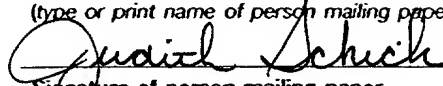
(Express Mail label number is mandatory.)

(Express Mail certification is optional.)

I hereby certify that this Transmittal Letter and the papers indicated as being transmitted therewith is being deposited with the United States Postal Service on this date March 19, 2002, in an envelope as "Express Mail Post Office to Addressee" Mailing Label Number EV005525610US, addressed to the: Assistant Commissioner for Patents,

Judith Schick

(type or print name of person mailing paper)



Signature of person mailing paper

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. § 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

***WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 1 of 8)

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NOTE: To avoid abandonment of the application, the applicant shall furnish to the USPTO, not later than 20 months from the priority date: (1) a copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the USPTO; and (2) the basic national fee (see 37 C.F.R. § 1.492(a)). The 30-month time limit may not be extended. 37 C.F.R. § 1.495.

WARNING: Where the items are those which can be submitted to complete the entry of the international application into the national phase are subsequent to 30 months from the priority date the application is still considered to be in the international state and if mailing procedures are utilized to obtain a date the express mail procedure of 37 C.F.R. § 1.10 must be used (since international application papers are not covered by an ordinary certificate of mailing—See 37 C.F.R. § 1.8.

NOTE: Documents and fees must be clearly identified as a submission to enter the national state under 35 U.S.C. § 371 otherwise the submission will be considered as being made under 35 U.S.C. § 111. 37 C.F.R. § 1.494(f).

- I. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 U.S.C. § 371:
- a. ☒ This express request to immediately begin national examination procedures (35 U.S.C. § 371(f)).
 - b. ☒ The U.S. National Fee (35 U.S.C. § 371(c)(1)) and other fees (37 C.F.R. § 1.492) as indicated below:

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2. Fees

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CLAIMS FEE	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
<input type="checkbox"/>	TOTAL CLAIMS				
	20	-20=	0	x \$18.00=	\$
	INDEPENDENT CLAIMS				
	2	-3=	0	x \$.84.00	
	MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+ \$260.00
BASIC FEE**	<input type="checkbox"/> U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an International preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U.S. PTO: <input type="checkbox"/> and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(1) to (4) have been satisfied for all the claims presented in the application entering the national stage (37 C.F.R. § 1.492(a)(4))\$100 <input type="checkbox"/> and the above requirements are not met (37 C.F.R. § 1.492(a)(1))\$750				
	<input checked="" type="checkbox"/> U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in § 1.445(a)(2) to the U.S. PTO: <input type="checkbox"/> has been paid (37 C.F.R. § 1.492(a)(2))\$740 <input checked="" type="checkbox"/> has not been paid (37 C.F.R. § 1.492(a)(3))\$1040 <input type="checkbox"/> where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 C.F.R. § 1.492(a)(5))\$890				1040.00
	Total of above Calculations				=1040.00
SMALL ENTITY	Reduction by 1/2 for filing by small entity, if applicable. Affidavit must be filed also. (note 37 C.F.R. § 1.9, 1.27, 1.28)				-
	Subtotal				1040.00
	Total National Fee				\$1040.00
	Fee for recording the enclosed assignment document \$40.00 (37 C.F.R. § 1.21(h)). (See Item 13 below). See attached "ASSIGNMENT COVER SHEET".				40.00
TOTAL	Total Fees enclosed				\$1080.00

RECEIVED 19 MAR 2002

*See attached Preliminary Amendment Reducing the Number of Claims.

- i. ☒ A check in the amount of \$1080.00 to cover the above fees is enclosed.
- ii. ☐ Please charge Account No. _____ in the amount of \$ _____.
A duplicate copy of this sheet is enclosed.

****WARNING:** "To avoid abandonment of the application the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 30 months from the priority date: * * * (2) the basic national fee (see § 1.492(a)). The 30-month time limit may not be extended." 37 C.F.R. § 1.495(b).

WARNING: If the translation of the international application and/or the oath or declaration have not been submitted by the applicant within thirty (30) months from the priority date, such requirements may be met within a time period set by the Office. 37 C.F.R. § 1.495(b)(2). The payment of the surcharge set forth in § 1.492(e) is required as a condition for accepting the oath or declaration later than thirty (30) months after the priority date. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than thirty (30) months after the priority date. Failure to comply with these requirements will result in abandonment of the application. The provisions of § 1.136 apply to the period which is set. Notice of Jan. 3, 1993, 1147 O.G. 29 to 40.

3. ☒ A copy of the International application as filed (35 U.S.C. § 371(c)(2)):

NOTE: Section 1.495 (b) was amended to require that the basic national fee and a copy of the international application must be filed with the Office by 30 months from the priority date to avoid abandonment. "The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time, the International Bureau notifies applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage, the applicant normally need only check to be sure the notice from the International Bureau has been received and then pay the basic national fee by 30 months from the priority date." Notice of Jan. 7, 1993, 1147 O.G. 29 to 40, at 35-36. See item 14c below.

- a. ☐ is transmitted herewith.
- b. ☐ is not required, as the application was filed with the United States Receiving Office.
- c. ☒ has been transmitted
 - i. ☒ by the International Bureau.
Date of mailing of the application (from form PCT/1B/308): 29 March 2001
 - ii. ☐ by applicant on _____
Date

4. ☒ A translation of the International application into the English language (35 U.S.C. § 371(c)(2)):

- a. ☐ is transmitted herewith.
- b. ☒ is not required as the application was filed in English.
- c. ☐ was previously transmitted by applicant on _____
Date
- d. ☐ will follow.

3d PCTO 19 MAR 2002

5. ☐ Amendments to the claims of the International application under PCT Article 19 (35 U.S.C. § 371(c)(3)):

NOTE: The Notice of January 7, 1993 points out that 37 C.F.R. § 1.495(a) was amended to clarify the existing and continuing practice that PCT Article 19 amendments must be submitted by 30 months from the priority date and this deadline may not be extended. The Notice further advises that: "The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendments. Applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected." 1147 O.G. 29-40, at 36.

- a. ☐ are transmitted herewith.
 - b. ☐ have been transmitted
 - i. ☐ by the International Bureau.
Date of mailing of the amendment (from form PCT/1B/308): _____
 - ii. ☐ by applicant on (date) _____
Date
 - c. ☐ have not been transmitted as
 - i. ☐ applicant chose not to make amendments under PCT Article 19.
Date of mailing of Search Report (from form PCT/ISA/210): _____
 - ii. ☐ the time limit for the submission of amendments has not yet expired.
The amendments or a statement that amendments have not been made will be transmitted before the expiration of the time limit under PCT Rule 46.1.
6. ☐ A translation of the amendments to the claims under PCT Article 19 (38 U.S.C. § 371(c)(3)):
- a. ☐ is transmitted herewith.
 - b. ☐ is not required as the amendments were made in the English language.
 - c. ☐ has not been transmitted for reasons indicated at point 5(c) above.
7. ☒ A copy of the international examination report (PCT/IPEA/409)
- ☒ is transmitted herewith.
 - ☐ is not required as the application was filed with the United States Receiving Office.
8. ☐ Annex(es) to the international preliminary examination report
- a. ☐ is/are transmitted herewith.
 - b. ☐ is/are not required as the application was filed with the United States Receiving Office.
9. ☐ A translation of the annexes to the international preliminary examination report
- a. ☐ is transmitted herewith.
 - b. ☐ is not required as the annexes are in the English language.

- ☐ 37 C.F.R. § 1.492(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.492(d)), it might be best not to authorize the PTO to charge additional claim fees, except possible when dealing with amendments after final action.

- ☐ 37 C.F.R. § 1.17 (application processing fees)
- ☐ 37 C.F.R. § 1.17(a)(1)-(5) (extension fees pursuant to § 1.136(a).
- ☐ 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. § 1.28(b) requires "Notification of any change in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying . . . issue fee." From the wording of 37 C.F.R. § 1.28(b): (a) notification of change of status must be made even if the fee is paid as "other than a small entity" and (b) no notification is required if the change is to another small entity.

- ☐ 37 C.F.R. § 1.492(e) and (f) (surcharge fees for filing the declaration and/or filing an English translation of an International Application later than 30 months after the priority date).



SIGNATURE OF PRACTITIONER

Reg. No.: 27,550

Tel. No.: (203) 261-1234

Customer No.: 004955

Alfred A. Fressola

(type or print name of practitioner)

WARE, FRESSOLA, VAN DER SLUYS & ADOLPHSON LLP

755 Main Street, Building Five

P.O. Address

Box 224

Monroe, CT 06468

10/088539

14. ☒ Additional documents:

JC10 Rec'd PCT/PTO 19 MAR 2002

- a. ☐ Copy of request (PCT/RO/101)
- b. ☒ International Publication No. WO 01/21312 A1
- i. ☒ Specification, claims and drawing
- ii. ☐ Front page only
- c. ☒ Preliminary amendment (37 C.F.R. § 1.121)
- d. ☐ Other

15. ☒ The above checked items are being transmitted

- a. ☒ before 30 months from any claimed priority date.
- b. ☐ after 30 months.

16. ☐ Certain requirements under 35 U.S.C. § 371 were previously submitted by the applicant on _____, namely:

AUTHORIZATION TO CHARGE ADDITIONAL FEES

WARNING: Accurately count claims, especially multiple dependant claims, to avoid unexpected high charges if extra claims are authorized.

NOTE: "A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission." 37 C.F.R. § 1.136(a)(3).

NOTE: "Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

☒ The Commissioner is hereby authorized to charge the following additional fees that may be required by this paper and during the entire pendency of this application to Account No. 23-0442

☒ 37 C.F.R. § 1.492(a)(1), (2), (3), and (4) (filing fees)

WARNING: Because failure to pay the national fee within 30 months without extension (37 C.F.R. § 1.495(b)(2)) results in abandonment of the application, it would be best to always check the above box.

(Transmittal Letter to the United States Elected Office (EO/US) [13-18]—page 7 of 8)

10. ☒ An oath or declaration of the inventor (35 U.S.C. § 371(c)(4)) complying with 35 U.S.C. § 115
- a. ☐ was previously submitted by applicant on _____
Date
- b. ☒ is submitted herewith, and such oath or declaration
- i. ☐ is attached to the application.
- ii. ☒ identifies the application and any amendments under PCT Article 19 that were transmitted as stated in points 3(b) or 3(c) and 5(b); and states that they were reviewed by the inventor as required by 37 C.F.R. § 1.70.
- iii. ☐ will follow.

II. Other document(s) or information included:

11. ☒ An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):
- a. ☐ is transmitted herewith.
- b. ☒ has been transmitted by the International Bureau.
Date of mailing (from form PCT/IB/308): 29 March 2001
- c. ☐ is not required, as the application was searched by the United States International Searching Authority.
- d. ☐ will be transmitted promptly upon request.
- e. ☐ has been submitted by applicant on _____
Date
12. ☒ An Information Disclosure Statement under 37 C.F.R. §§ 1.97 and 1.98:
- a. ☒ is transmitted herewith.
- Also transmitted herewith is/are:
- ☒ Form PTO-1449 (PTO/SB/08A and 08B).
- ☒ Copies of citations listed.
- b. ☐ will be transmitted within THREE MONTHS of the date of submission of requirements under 35 U.S.C. § 371(c).
- c. ☐ was previously submitted by applicant on _____
Date
13. ☒ An assignment document is transmitted herewith for recording.
- A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☒ FORM PTO 1595 is also attached.

Metso Paper, Inc.
Fabianinkatu 9 A, FIN-00130
Helsinki, Finland

10/088539

IC10 Rec'd PCT/PTO 1 9 MAR 2002

PATENT
540-016.2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the matter of: Kankaanpaa)	
)	
PCT/FI00/00804)	
)	
International Filing Date: September 21, 2000)	
)	
Serial No:)	Group Art Unit
)	Examiner:
Filed: Herewith)	
)	
For: Method and Device for Processing Pulp)	

ASSISTANT COMMISSIONER OF PATENTS
WASHINGTON, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Please preliminarily amend the above-referenced application as follows:

In the Specification:

On page 1, prior to line 4, please insert a new heading as follows:

--Technical Field--.

Express Mail No. EV005525610US

Please replace the paragraph beginning at page 1, line 4, with the following rewritten paragraph:

--The object of the present invention is directed to a method and device for dispersing pulp, especially pulp containing waste paper, that also contains solid material and a liquid phase in which method ground pulp mass is fed between the blade surfaces of a dispersing device that are brought in a rotating movement in relation to one another.--

On page 1, prior to line 10, please insert a new heading as follows:

--Background of the Invention--.

Please replace the paragraph beginning at page 1, line 10, with the following rewritten paragraph:

--Pulp is treated in a dispersing device where the impurities of the pulp are separated from the fibers that are nevertheless not damaged in the treatment. This may be accomplished with the aid of mutually opposed blade equipped blade surfaces of the dispersing device where one blade surface along its base (stator) is fixed and the other blade surface along its base (rotor) is rotating in relation to the other blade surface. The blades and the narrow openings between them cause the pulp to move back and forth in the dispersing device, whereby separation of impurities from the fibers is accomplished. The purpose of dispersing is usually mechanical release of impurities from the fibers and simultaneously the grinding of impurities into smaller particles without nevertheless negatively affecting the properties of the fibers.--

Please replace the paragraph beginning at page 1, line 22, with the following rewritten paragraph:

--A dispersing device is especially well suited for treatment of pulp mass containing waste paper that contains ink particles or impurities such as adhesives and melt or fusion coatings.

5 A method and dispersing device intended to treat this kind of pulp is presented in Patent Publication SE 502906. In the publication there is presented a grinding element that consists of two mutually opposed grinding disks that are equipped with elevated indents. The inclined elevated patterns are arranged radially on the disks.--

Please replace the paragraph beginning at page 1, line 30, with the following rewritten paragraph:

10 --In addition to the planar dispersing devices even cone-shaped dispersing devices may be used. However, the problem with the conical dispersing devices is the small amount of mass transferring power allowed by them. Therefore when the pressure in the outlet chamber is high, that is, in the openings between the indents, the thrust is high, and adjusting the
15 working faces becomes more difficult and the load of the dispersing device increases. The dispersing device may even become clogged, whereby the process is interrupted. This problem is avoided by using the inventive method.--

On page 2, prior to line 1, please insert a new heading as follows:

--Summary of the Invention--.

Please replace the paragraph beginning at page 2, line 18, with the following

rewritten paragraph:

--In the method according to the invention the function of the blade surfaces of the dispersing device may be adjusted and regulated by decreasing the pressure in the outlet area of the dispersing device, that is the outlet pressure of the device. The outlet pressure of the dispersing device may be adjusted lower than the pressure in the outlet chamber of the dispersing device by connecting a running wheel onto the rotor of the dispersed device. It is possible to decrease the outlet pressure to such a low value that the pressure at the end of the blade area is lower than in the beginning of the blade area, whereby suction is created towards the end area, whereby problems arising due to the low transferring power of the traditional cone-shaped dispersing device are avoided. When using the inventive method the probability of clogging of the dispersing device is thus low. From the above it follows even that when using the inventive method the blades of the working surfaces of the dispersing device may be mounted at closer distances to one another, whereby the number of the blades is increased, whereby the efficiency and productivity of the dispersing event are further improved.--

Please replace the paragraph beginning at page 3, line 10, with the following

rewritten paragraph:

--The hydrostatic pressure for pumping of the pulp further to the next piping can be produced with the dispersing device or with separate pumping equipment. Pumping in the outlet area of the dispersing device is accomplished with the aid of a running wheel situated at the outlet

end of the blade opening and of which there may be several in the device. In the method, dispersing and pumping are thus realized in separate parts of the device, whereby they do not interfere with each other.--

Please replace the paragraph beginning at page 3, line 17, with the following
5 rewritten paragraph:

--In the method according to the invention, pulp may in addition be diluted at the outlet end of the blade opening with fluid introduced to the intake side of the running wheel. Thus the pulp may be diluted for the next process, if need be, without a separate work stage. In the outlet chamber mixing is sufficient to cause efficient dilution without a separate mixing
10 means. The dilution fluid that may be pressurized or not, is introduced to the intake side of the running wheel through a feed channel of which there is at least one in the device.--

Please replace the paragraph beginning at page 3, line 35 through page 4, line 6, with the following rewritten paragraph:

--As stated above, according to the invention a conical dispersing device is used as dispersing
15 equipment, the advantage of which is a wide working area. Hereby the outer cone preferably acts as a stator and the inner cone preferably acts as a rotor, onto which is additionally fixed a running wheel. The running wheel is most suitably fixed onto the cone acting as a rotor such that it diverts the flow of mass away from the axis of the cone. The advantage of a conical dispersing device in regard to a planar dispersing device lies in that
20 the number of blades may be raised 50-150% in relation to a planar dispersing device,

whereby the probability of the blade meeting an impurity increases considerably and the efficiency of the dispersing event is improved.--

Please replace the paragraph beginning at page 4, line 8, with the following rewritten paragraph:

5 --Further in addition to the above, the following advantages among others are realized by a conical dispersing device: in dispersing impurities higher efficiency than with a planar dispersing device is realized if both are operated at the same energy level; breaking of pulp fibers is reduced because energy is distributed on a greater number of blades, whereby a higher energy level than with a planar dispersing device may be used without nevertheless
10 damaging the fibers; the service life of the blades of the dispersing device is increased because the working surface area is larger and hence the relation energy/blade lower.--

On page 4, prior to line 35, please insert a new heading as follows:

--Brief Description of the Drawings--.

Please replace the paragraph beginning at page 5, line 1, with the following rewritten paragraph:
15

--Fig. 1 is a partial longitudinal section of the dispersing device according to the invention, Fig. 2 presents a partial scheme of the structure and flow channels of the running wheel of the dispersing device presented in Fig. 1. Fig. 2 shows in addition the principle of the flow channels of the running wheel. The partial scheme is a cross section of the plane marked
20 AA in Fig. 1, and

Fig. 3 presents the structure of the blade surface of the dispersing device according to Fig.

1.--

On page 5, prior to line 9, please insert a new heading as follows:

--Best Mode for Carrying Out the Invention--.

5 Please replace the paragraph beginning at page 5, line 35 through page 6, line 4, with the following rewritten paragraph:

--Fig. 2 presents a partial scheme of the structure of the running wheel 7 and of the flow channels 8 as well as the principle of the flow channels 8 of the running wheel. The partial scheme is a cross section of the plane marked AA in Fig. 1. The running wheel 7 has flow channels 8 that protrude axially outwards and are outlined by dashed lines 12. The flow of pulp 13 is away from the axis of the running wheel 7 in a direction opposite to the direction of rotation 14 of the running wheel 7. The running wheel 7 is mounted on the rotor in such a way that the direction of the flow of mass 13 changes in relation to the axis of the cone.--

15 Please replace the paragraph beginning at page 6, line 15, with the following rewritten paragraph:

--To a person skilled in the art it is obvious that the inventive method and the inventive device for dispersing pulp are not limited to the example presented above while they are based on the following claims.--

In the Claims:

Claims 3-4, 6-7 and 10-12 have been amended.

3) (Amended) A method according to claim 2, characterized in that said running wheel (7) is fixed on the cone acting as a rotor in such a way that it diverts the flow of mass away from the axis of the cone.

4) (Amended) A method according to claim 3, characterized in that the dilution of pulp at the outlet end (6) of the blade opening (5) is accomplished by fluid introduced to the intake side of the running wheel (7).

6) (Amended) A method according to claim 5, characterized in that the density of the pulp is after dilution 4-12%.

7. (Amended) A method according to claim 6, characterized in that the pulp containing waste paper is dispersed in order to release printing ink and/or impurities from the fibers of the pulp.

10. (Amended) A dispersing device according to claim 9, characterized in that the conical surface is at a 10-75° angle to the axis of the cone, preferably at a 10-30° angle to the axis of the cone.

1 11. (Amended) A dispersing device according to claim 10, characterized in that
2 the blades (4) are arranged on said conical surface such that they overlap.

1 12. (Amended) A dispersing device according to claim 11, characterized in that
2 the blade surfaces of the device consist of cylindrical surfaces and conical surfaces that are in
3 extension to one another.

Claims 13-20 have been added.

13. (New) A dispersing device according to claim 8, characterized in that the
conical surface is at a 10-75° angle to the axis of the cone, preferably at a 10-30° angle to
the axis of the cone.

14. (New) A dispersing device according to claim 8, characterized in that the
blades (4) are arranged on said conical surface such that they overlap.

1 15. (New) A dispersing device according to claim 8, characterized in that the
2 blade surfaces of the device consist of cylindrical surfaces and conical surfaces that are in
3 extension to one another.

1 16) (New) A method according to claim 1, characterized in that said running
2 wheel (7) is fixed on the cone acting as a rotor in such a way that it diverts the flow of mass
3 away from the axis of the cone.

1 17) (New) A method according to claim 1, characterized in that the dilution of
2 pulp at the outlet end (6) of the blade opening (5) is accomplished by fluid introduced to the
3 intake side of the running wheel (7).

1 18) (New) A method according to claim 17, characterized in that the density of
2 the pulp to be dispersed is before dilution 15-35%.

1 19) (New) A method according to claim 17, characterized in that the density of
2 the pulp is after dilution 4-12%.

1 20. (New) A method according to claim 1, characterized in that the pulp
2 containing waste paper is dispersed in order to release printing ink and/or impurities from the
3 fibers of the pulp.

In the Abstract:

Please replace the paragraph beginning at page 9, line 1, with the following rewritten paragraph:

--Abstract of the Disclosure

A method and device for dispersing pulp, especially pulp containing waste paper, where ground pulp mass is fed between the blade surfaces (3) of a dispersing device that are brought in a rotating movement in relation to one another. The invention is characterized in that the dispersing event takes place in a narrow opening (5) between the conical surfaces (3) at the outlet end (6) of which there is arranged a running wheel (7) acting as a pump by which the pulp is pumped out of the dispersing device by centrifugal force. The inner cone of the dispersing device may act as a rotor and the outer cone may act as a stator. In addition, the pulp may be diluted at the outlet end of the blade opening (5) with fluid introduced to the intake side of the running wheel (7).--

Remarks

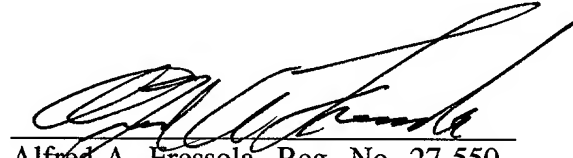
This preliminary amendment is filed for the purpose of placing the application into standard U.S. format and to correct any grammatical errors. Claims 3-4, 6-7 and 10-12 have been amended and claims 13 - 20 have been added. Consideration and allowance of the claims is earnestly solicited.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Respectfully submitted,

Date:

3/19/02


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AAF/aks

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Paragraph beginning at page 1, line 4 has been amended as follows:

The object of [this] the present invention is directed to a method and device for dispersing pulp, especially pulp containing waste paper, that also contains solid material and a liquid phase in which method ground pulp mass is fed between the blade surfaces of a dispersing device that are brought in a rotating movement in relation to one another. [An object of the invention is also a dispersing device for applying the aforementioned method].

Paragraph beginning at page 1, line 10 has been amended as follows:

Pulp is treated in a dispersing device where the impurities of the pulp are separated from the fibers that are nevertheless not damaged in the treatment. This may be accomplished with the aid of mutually opposed blade equipped blade surfaces of the dispersing device [of which] where one blade surface [surfaces one] along [with] its base (stator) is fixed and the other blade surface along [with] its base (rotor) is rotating in relation to the other blade surface.

The blades and the narrow openings between them cause the pulp to move back and forth in the dispersing device, whereby separation of impurities from the fibers is accomplished. The purpose of dispersing is usually mechanical release of impurities from the fibers and simultaneously the grinding of impurities into smaller particles without nevertheless negatively affecting the properties of the fibers.

Paragraph beginning at page 1, line 22 has been amended as follows:

A dispersing device is especially well suited for treatment of pulp mass containing waste paper that contains ink particles or impurities such as adhesives and melt or fusion coatings. A method and dispersing device intended to [treatment of] treat this kind of pulp is presented in Patent Publication SE 502906. In the publication there is presented a grinding element
5 that consists of two mutually opposed grinding disks that are equipped with elevated indents. The inclined elevated patterns are arranged radially on the disks.

Paragraph beginning at page 1, line 30 has been amended as follows:

In addition to the planar dispersing devices even cone-shaped dispersing devices may be used. However, the problem with the conical dispersing devices is the small amount of mass
10 transferring power allowed by them. Therefore when the pressure in the outlet chamber is high, that is, in the openings between the indents, the thrust is high, and adjusting the working faces becomes more difficult and the load of the dispersing device increases. The dispersing device may even become clogged, whereby the process is interrupted. This problem is avoided by using the inventive method.

15 Paragraph beginning at page 2, line 18 has been amended as follows:

In the method according to the invention the function of the blade surfaces of the dispersing device may be adjusted and regulated by decreasing the pressure in the outlet area of the dispersing device, that is the outlet pressure of the device. The outlet pressure of the dispersing device may be adjusted lower than the pressure in the outlet chamber of the
20 dispersing device by connecting a running wheel onto the rotor of the dispersed device. It is possible to decrease the outlet pressure to such a low value that the pressure at the end of the

blade area is lower than in the beginning of the blade area, [where by] whereby suction is created towards the end area, whereby problems arising due to the low transferring power of the traditional cone-shaped dispersing device are avoided. When using the inventive method the probability of clogging of the dispersing device is thus low. From the above it follows even that when using the inventive method the blades of the working surfaces of the dispersing device may be mounted at closer distances to one another, whereby the number of the blades is increased, whereby [further] the efficiency and productivity of the dispersing event are further improved.

Paragraph beginning at page 3, line 10 has been amended as follows:

The hydrostatic pressure for pumping of the pulp further to the next piping can be produced with the dispersing device or with [a] separate pumping equipment. Pumping in the outlet area of the dispersing device is accomplished with the aid of a running wheel situated at the outlet end of the blade opening and of which there may be several in the device. In the method, dispersing and pumping are thus realized in separate parts of the device, whereby they [don't] do not interfere with each other.

Paragraph beginning at page 3, line 17 has been amended as follows:

In the method according to the invention, pulp may [be] in addition be diluted at the outlet end of the blade opening with fluid introduced to the intake side of the running wheel. Thus the pulp may be diluted for the next process, if need [may] be, without a separate work stage. In the outlet chamber mixing is sufficient to cause efficient dilution without a separate

mixing means. The dilution fluid that may be pressurized or not, is introduced to the intake side of the running wheel through a feed channel of which there is at least one in the device.

Paragraph beginning at page 3, line 35 through page 4, line 6 has been amended as follows:

5 As stated above, according to the invention a conical dispersing device is used as dispersing equipment, the advantage of which is a wide working area. Hereby the outer cone preferably acts as a stator and the inner cone preferably acts as a rotor, onto which is additionally fixed a running wheel. The running wheel is most suitably fixed onto the cone acting as a rotor such that it diverts the flow of mass away from the axis of the cone. The
10 advantage of a conical dispersing device in regard to a planar dispersing device lies in that the number of blades may be raised 50-150% in relation to a planar dispersing device, whereby the probability of the blade meeting an impurity increases considerably and the efficiency of the dispersing event is improved.

Paragraph beginning at page 4, line 8 has been amended as follows:

15 Further in addition to the above, the following advantages among others are realized by a conical dispersing device: in dispersing impurities higher efficiency than with a planar dispersing device is realized [by] if both are operated at the same [known] energy level; breaking of pulp fibers is reduced because energy is distributed on a greater number of blades, whereby a higher energy level than with a planar dispersing device may be used
20 without nevertheless damaging the fibers; the service life of the blades of the dispersing

device is increased because the working surface area is larger and hence the relation energy/blade lower.

Paragraph beginning at page 5, line 1 has been amended as follows:

[Fig. 1 presents an embodiment of the dispersing device according to the invention,]

Fig. 1 is a partial longitudinal section of the [aforementioned] dispersing device according to the invention,

Fig. 2 presents a partial scheme of the structure and flow channels of the running wheel of the dispersing device presented in Fig. 1. Fig. 2 shows in addition the principle of the flow channels of the running wheel. The partial scheme is a cross section of the plane marked AA in Fig. 1, and

Fig. 3 presents the structure of the blade surface of the dispersing device according to Fig. 1.

Paragraph beginning at page 5, line 35 through page 6, line 4 has been amended as follows:

[In] Fig. 2 [is presented] presents a partial scheme of the structure of the running wheel 7 and of the flow channels 8 as well as the principle of the flow channels 8 of the running wheel. The partial scheme is a cross section of the plane marked AA in Fig. 1. The running wheel 7 has flow channels 8 that protrude axially outwards and are outlined by [organs] dashed lines 12. The flow of pulp 13 is away from the axis of the running wheel 7 in a direction opposite to the direction of rotation 14 of the running wheel 7. The running wheel 7 is mounted on the rotor in such a way that the direction of the flow of mass 13 changes in relation to the axis of the cone.

Paragraph beginning at page 6, line 15 has been amended as follows:

To [the one] a person skilled in the art it is obvious that the inventive method and the inventive device for dispersing pulp are not limited to the example presented above while they are based on the following claims.

5 In the Claims:

Claims 3-4, 6-7, and 10-12 have been amended.

1 3) (Amended) A method according to [one of the preceding claims] claim 2,
2 characterized in that said running wheel (7) is fixed on the cone acting as a rotor in such a
3 way that it diverts the flow of mass away from the axis of the cone.

4) (Amended) A method according to [one of the preceding claims] claim 3,
2 characterized in that the dilution of pulp at the outlet end (6) of the blade opening (5) is
3 accomplished by fluid introduced to the intake side of the running wheel (7).

6) (Amended) A method according to [claim 4 or] claim 5, characterized in that
2 the density of the pulp is after dilution 4-12%.

1 7. (Amended) A method according to [one of the preceding claims] claim 6,
2 characterized in that the pulp containing waste paper is dispersed in order to release printing
3 ink and/or impurities from the fibers of the pulp.

10. (Amended) A dispersing device according to [claim 8 or] claim 9,
characterized in that the conical surface is at a 10-75° angle to the axis of the cone,
preferably at a 10-30° angle to the axis of the cone.

11. (Amended) A dispersing device according to [one of claims 8 -] claim 10,
characterized in that the blades (4) are arranged on said conical surface such that they
overlap.

12. (Amended) A dispersing device according to [any one of claims 8 -] claim 11,
characterized in that the blade surfaces of the device consist of cylindrical surfaces and
conical surfaces that are in extension to one another.

In the Abstract:

Paragraph beginning at page 9, line 1 has been amended as follows:

[57] Abstract of the Disclosure

[The object of the invention is a] A method and [a] device for dispersing pulp, especially
pulp containing waste paper, [in which method] where ground pulp mass is fed between the
blade surfaces (3) of a dispersing device that are brought in a rotating movement in relation
to one another. The invention is characterized in that the dispersing event takes place in a

narrow opening (5) between the conical surfaces (3) at the outlet end (6) of which there is arranged a running wheel (7) acting as a pump by which the pulp is pumped out of the dispersing device by centrifugal force. The inner cone of the dispersing device may act as a rotor and the outer cone may act as a stator. In addition, the pulp may be diluted at the outlet end of the blade opening (5) with fluid introduced to the intake side of the running wheel (7).

Method and Device for Processing Pulp

5 The object of this invention is a method for dispersing pulp, especially pulp containing waste paper, that contains solid material and a liquid phase in which method ground pulp mass is fed between the blade surfaces of a dispersing device that are brought in a rotating movement in relation to one another. An object of the invention is also a dispersing device for applying the aforementioned method.

10 Pulp is treated in a dispersing device where the impurities of the pulp are separated from the fibers that are nevertheless not damaged in the treatment. This may be accomplished with the aid of mutually opposed blade equipped blade surfaces of the dispersing device of which blade surfaces one along with its base (stator) is fixed and the other blade surface along with its base (rotor) is rotating in relation to the other blade surface. The blades and the narrow openings between them cause the pulp move back and forth in the dispersing device, whereby separation of impurities from the fibers is accomplished. The purpose of dispersing is usually mechanical release of impurities from the fibers and simultaneously the grinding of impurities into smaller particles without nevertheless negatively affecting the properties of the fibers.

20 A dispersing device especially well suited for treatment of pulp mass containing waste paper that contains ink particles or impurities such as adhesives and melt or fusion coatings. A method and dispersing device intended to treatment of this kind
25 of pulp is presented in Patent Publication SE 502 906. In the publication there is presented a grinding element that consists of two mutually opposed grinding disks that are equipped with elevated indents. The inclined elevated patterns are arranged radially on the disks.

30 In addition to the planar dispersing devices even cone-shaped dispersing devices may be used. However, the problem with the conical dispersing devices is the small amount of mass transferring power allowed by them. Therefore when the pressure in the outlet chamber is high, that is, in the openings between the indents the thrust is high, adjusting the working faces becomes more difficult and the load of the
35 dispersing device increases. The dispersing device may even become clogged, whereby the process is interrupted. This problem is avoided by using the inventive method.

In the method according to the invention pulp, especially pulp containing waste paper, is dispersed in a blade opening between cone-shaped surfaces to the outlet end of which is arranged a running wheel acting as a pump by which the pulp is pumped with the aid of centrifugal force out of the dispersing device.

In the method according to the invention a conical dispersing device is used, the advantage of which is a wide working area. Hereby the outer cone preferably acts as stator and the inner cone preferably acts as rotor, onto which is additionally fixed a running wheel. The running wheel is most suitably fixed onto the cone acting as rotor such that it diverts the flow of mass away from the axis of the cone. Most preferably the running wheel is perpendicular to the axis of the cone such that the flow is in a perpendicular plane with regard to the axis. The advantage of a conical dispersing device in regard to a planar dispersing device lies in that blade surface area may be raised 50-150% in relation to a planar dispersing device, whereby the probability of the blade meeting an impurity increases considerably and the efficiency of the dispersing event is improved.

In the method according to the invention the function of the blade surfaces of the dispersing device may be adjusted and regulated by decreasing the pressure in the outlet area of the dispersing device, that is the outlet pressure of the device. The outlet pressure of the dispersing device may be adjusted lower than the pressure in the outlet chamber of the dispersing device by connecting a running wheel onto the rotor of the dispersing device. It is possible to decrease the outlet pressure to such a low value that the pressure at the end of the blade area is lower than in the beginning of the blade area, where by suction is created towards the end area, whereby problems arising due to the low transferring power of the traditional cone-shaped dispersing device are avoided. When using the inventive method the probability of clogging of the dispersing device is thus low. From the above it follows even that when using the inventive method the blades of the working surfaces of the dispersing device may be mounted at closer distances to one another, whereby the number of the blades is increased, whereby further the efficiency and productivity of the dispersing event are improved.

In the inventive method the pressure at the inlet of the blade area, that is the inlet pressure, may be even considerably lower than the pressure in the outlet chamber of the dispersing device, into which the running wheel pumps the pulp. Hereby the pressure in the outlet chamber may be raised to such a high level that the pulp once dispersed may be transferred through the piping and to an even higher level than the

dispersing device without a separate pump. In this way the inventive method can replace a method, in which a combination of a dispersing device, a pump, a feed tank for the pump and in some cases a screw conveyor is used. Further by the method according to the invention a high efficiency and productivity of the dispersing device are accomplished along with transfer of the pulp to the next stage of the process as well as if need may be, a hydrostatic pressure of the pulp that is sufficiently high for the next stage of the process. Thus the inventive method has a lower energy consumption than traditional methods.

The hydrostatic pressure for pumping of the pulp further to the next piping can be produced with the dispersing device or with a separate pumping equipment. Pumping in the outlet area of the dispersing device is accomplished with the aid of a running wheel situated at the outlet end of the blade opening and of which there may be several in the device. In the method dispersing and pumping are thus realized in separate parts of the device, whereby they don't interfere with each other.

In the method according to the invention pulp may be in addition diluted at the outlet end of the blade opening with fluid introduced to the intake side of the running wheel. Thus the pulp may be diluted for the next process, if need may be, without a separate work stage. In the outlet chamber mixing is sufficient to cause efficient dilution without a separate mixing means. The dilution fluid that may be pressurized or not, is introduced to the intake side of the running wheel through a feed channel of which there is at least one in the device.

Also, an object of the invention is a dispersing device for dispersing pulp, especially pulp containing waste paper, that contains solid material and a liquid phase. The dispersing device according to the invention comprises mutually opposed conical surfaces equipped with blades which may be brought in a rotating movement in relation to one another, an inlet channel for introducing pulp into the blade opening between the rotating surfaces as well as an outlet chamber for removal of the dispersed pulp. The dispersing device is characterized in that its blade surfaces are conical and that it comprises in addition a running wheel situated at the outlet end of the blade opening.

As stated above, according to the invention a conical dispersing device is used as dispersing equipment, the advantage of which is a wide working area. Hereby the outer cone preferably acts as stator and the inner cone preferably acts as rotor, onto which is additionally fixed a running wheel. The running wheel is most suitably

fixed onto the cone acting as rotor such that it diverts the flow of mass away from the axis of the cone. The advantage of a conical dispersing device in regard to a planar dispersing device lies in that the number of blades may be raised 50-150% in relation to a planar dispersing device, whereby the probability of the blade meeting an impurity increases considerably and the efficiency of the dispersing event is improved.

Further in addition to the above, the following advantages among others are realized by a conical dispersing device: in dispersing impurities higher efficiency than with a planar dispersing device is realized by the same known energy level; breaking of pulp fibers is reduced because energy is distributed on a greater number of blades, whereby a higher energy level than with a planar dispersing device may be used without nevertheless damaging the fibers; the service life of the blades of the dispersing device is increased because the working surface area is larger and hence the relation energy/blade lower.

The blade surfaces of a conical dispersing device may be at an angle of 10-75° in relation to the axis of the cone, preferably at an angle of 10-30° in relation to the axis of the cone. The blade surfaces may also consist of cylindrical surfaces and conical surfaces that are in extension to one another, however, it is preferred that the blades are mainly situated on conical surfaces. The blades are arranged on the moving blade surface (rotor) and on the fixed blade surface (stator) such that the blades are overlapping one another. The shape of the blades may be chosen at will, but their size must be such that the rotor and the stator form a pair in which the blades overlap.

The flow channels of the running wheel are designed such that the pressure increases towards the outer circumference of the running wheel (cf. a centrifugal pump). A high pressure in the flow channels and at their outlet openings stops the pulp from flowing back from the outlet chamber to the blade area. Between the running wheel and the outlet chamber wall there is a narrow opening that makes it possible for the running wheel to move freely but not for the pulp to flow back or for the pressure to drop in the outlet chamber.

The invention is explained more in detail in the following with regard to the appended drawings in which:

Fig. 1 presents an embodiment of the dispersing device according to the invention, Fig. 1 is a partial longitudinal section of the aforementioned dispersing device, Fig. 2 presents a partial scheme of the structure and flow channels of the running wheel of the dispersing device presented in Fig. 1. Fig. 2 shows in addition the principle of the flow channels of the running wheel. The partial scheme is a cross section of the plane marked AA in Fig. 1, and Fig. 3 presents the structure of the blade surface of the dispersing device according to Fig. 1.

10 The conical dispersing device presented in Fig. 1 consists of a body part, a cone that includes the conical surfaces, of a running wheel and of an outlet chamber. The components in Fig. 1 are: 1 a feed point; 2 a cone; 3 conical surfaces; 4 a blade; 5 a blade opening; 6 an outlet point; 7 a running wheel; 8 a flow channel of the running wheel; 9 an outlet chamber; 10 a feed channel of the dilution fluid; 11 a narrow opening.

20 The pulp that contains waste paper and the density of which is suitably 15-35%, is introduced to the conical dispersing device at the feed point 1. The pulp moves back and forth on the conical surfaces 3 in the narrow openings 5 of the blades 4 while it is simultaneously transferred forwards on the cone 2. The negative pressure created at the outlet point 6 of the blade area increases the mobility of the pulp forwards towards the outlet point 6. In the blade area impurities of the pulp are separated mechanically from the fibers of the pulp, in addition to which the impurities are ground into smaller particles.

25 As the pulp moves on to the outlet point 6 of the blade area it is blended with the dilution fluid that is introduced to the outlet point 6 through a feed channel 10 for the dilution fluid. The dilution fluid may be pressurized or not. As the running wheel 7 revolves a flow is created and the pulp is blended in the dilution fluid. The revolving motion also accomplishes the differing pressures between various parts of the device mentioned above. The diluted pulp is transferred through flow channels 8 of the running wheel according to the principle presented in Fig. 2 to the outlet chamber 9. In the outlet chamber 9 the density of the pulp is suitably 4-12%.

35 In Fig. 2 is presented a partial scheme of the structure of the running wheel 7 and of the flow channels 8 as well as the principle of the flow channels 8 of the running wheel. The partial scheme is a cross section of the plane marked AA in Fig. 1. The running wheel 7 has flow channels 8 that protrude axially outwards and are outlined

by organs 12. The flow of pulp 13 is away from the axis of the running wheel 7 in a direction opposite to the direction of rotation 14 of the running wheel 7. The running wheel 7 is mounted on the rotor in such a way that the direction of the flow of mass 13 changes in relation to the axis of the cone.

5

Between the running wheel 7 and the wall of the outlet chamber 9 there is a narrow opening 11 that makes it possible for the running wheel 7 to move freely but not for the pulp to flow backwards or for the pressure to decrease in the outlet chamber.

10 In Fig. 3 is presented the arrangement of the blades 4 on the conical surface 3. The blades may be parallel with the conical surface lines or at a certain angle thereto, and their shape and mutual distance may be varied at will, as may be the blade patterns in various zones.

15 To the one skilled in the art it is obvious that the inventive method and the inventive device for dispersing pulp are not limited to the example presented above while they are based on the following claims.

Claims

1. A method for dispersing pulp, especially pulp containing waste paper, that contains solid material and a liquid phase, in which method ground pulp mass is fed
5 between the blade surfaces (3) of a dispersing device that are brought in a rotating movement in relation to one another, characterized in that the dispersing event takes place in a narrow opening (5) between the conical surfaces (3), at the outlet end (6) of which there is arranged a running wheel (7) acting as pump by which the pulp is pumped out of the dispersing device by centrifugal force.
- 10 2. A method according to claim 1, characterized in that the inner cone of the dispersing device acts as rotor and the outer cone acts as stator.
3. A method according to one of the preceding claims, characterized in that
15 said running wheel (7) is fixed on the cone acting as rotor in such a way that it diverts the flow of mass away from the axis of the cone.
4. A method according to one of the preceding claims, characterized in that the
20 dilution of pulp at the outlet end (6) of the blade opening (5) is accomplished by fluid introduced to the intake side of the running wheel (7).
5. A method according to claim 4, characterized in that the density of the pulp
to be dispersed is before dilution 15-35%.
- 25 6. A method according to claim 4 or claim 5, characterized in that the density of the pulp is after dilution 4-12%.
7. A method according to one of the preceding claims, characterized in that the
30 pulp containing waste paper is dispersed in order to release printing ink and/or impurities from the fibers of the pulp.
8. A dispersing device for processing pulp, especially pulp containing waste
35 paper, the dispersing device comprising mutually opposed working surfaces (2) fitted with blades that may be brought into a revolving motion in relation to one another, a feed channel (1) for introducing pulp to the blade opening between the blade surfaces as well as an outlet chamber (6) for removal of the dispersed pulp, characterized in that its blade surfaces (2) are conical and that it comprises additionally a running wheel (3) situated at the outlet end of the blade opening.

9. A dispersing device according to claim 8, characterized in that it comprises one or more feed channels (7) for the diluting fluid.

5 10. A dispersing device according to claim 8 or claim 9, characterized in that the conical surface is at a 10-75° angle to the axis of the cone, preferably at a 10 - 30° angle to the axis of the cone.

11. A dispersing device according to one of claims 8 - 10, characterized in that the blades (9) are arranged on said conical surfaces such that they overlap.

10 12. A dispersing device according to one of claims 8 - 11, characterized in that the blade surfaces of the device consist of cylindrical surfaces and conical surfaces that are in extension to one another.

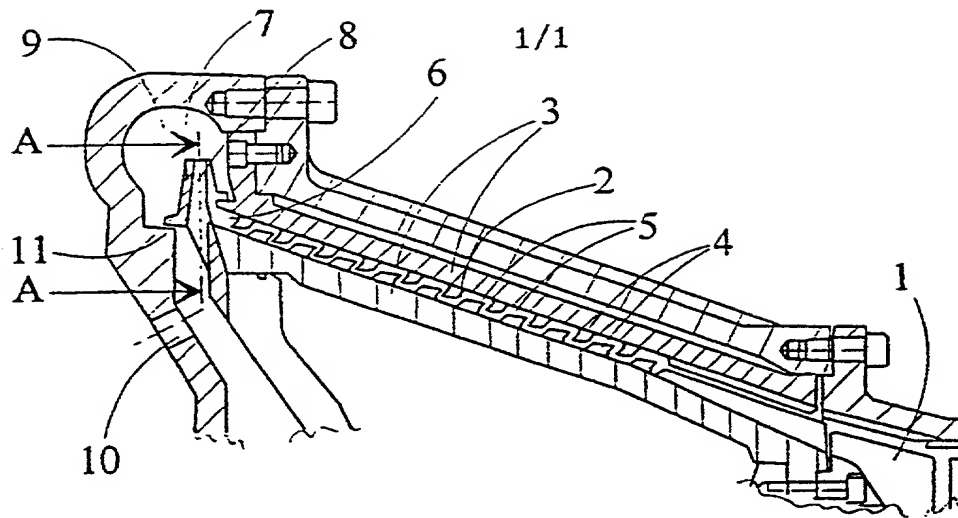


Fig.1

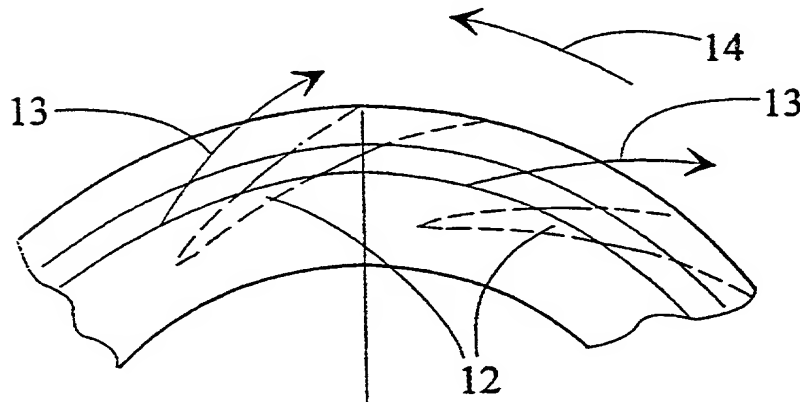


Fig.2

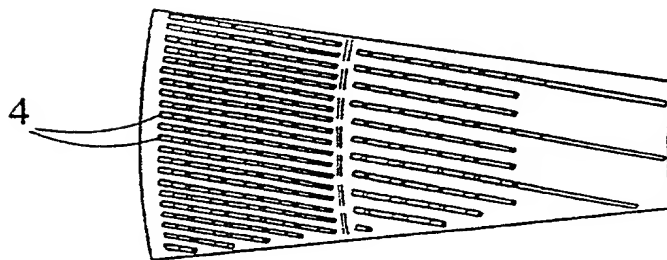


Fig. 3

COMBINED DECLARATION AND POWER OF ATTORNEY

(Docket Number)
540-016.2

As a below named inventor, I hereby declare that:

- my residence, post office address and citizenship are as stated below next to my name;
- I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: Method and device for processing pulp
- the specification of which is attached hereto unless the following box is checked: ☒. If the box is checked,
the application was filed on 21 September 2000
as U.S. Application Number
or PCT International Application Number PCT/FI00/00804
and was amended on (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application			Priority Not Claimed
19992010 (Application Number)	Finland (Country)	21 September 1999 (Day/Month/Year Filed)	<input type="checkbox"/>
(Application Number)	(Country)	(Day/Month/Year Filed)	<input type="checkbox"/>

To the extent permitted by rule or law, I hereby incorporate by reference the Prior Foreign Application(s) listed above.

I hereby claim the benefits under 35 U.S.C. §119(e) of any United States provisional application(s) listed below:

(Provisional Application Number)	(Day/Month/Year Filed)
(Provisional Application Number)	(Day/Month/Year Filed)

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose information which is material to patentability, as defined in 37 CFR §1.56, which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Application Number)	(Day/Month/Year Filed)	(Status--patented, pending, abandoned)
(Application Number)	(Day/Month/Year Filed)	(Status--patented, pending, abandoned)

The undersigned hereby authorizes the U.S. firm of **Ware, Fressola, Van Der Sluys & Adolphson LLP** to accept and follow instructions from the Finnish firm of **Berggren Oy Ab** as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. firm and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. firm will be so notified by the undersigned.

I hereby appoint the attorney(s) and/or agent(s) assigned to the customer number listed below, as may from time to time be amended, belonging to the U.S. firm of **Ware, Fressola, Van Der Sluys & Adolphson LLP**, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Customer Number

4955



004955

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Address all telephone calls to: Ware, Fressola, Van Der Sluys & Adolphson LLP at (203) 261-1234. Address all correspondence to: Alfred A. Fressola

Customer Number

4955



004955

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Veikko KANKAANPÄÄ

Full name of sole or first inventor (given name, middle initial, FAMILY NAME(S) IN UPPER CASE)

Inventor's Signature

12 February, 2002

Date

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Inventor's Signature

Date

Residence

Citizenship

Post Office Address:

Full name of third inventor (given name, middle initial, FAMILY NAME(S) IN UPPER CASE)

Inventor's Signature

Date

Residence

Citizenship

Post Office Address:

☐ Additional inventors are being named on separately numbered sheets attached hereto.